

Plasmonic droplets for high throughput sensing

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In this talk I will present a simple, fast, and inexpensive method for characterizing adsorption and desorption of metallic gold nanoparticles at a liquid-liquid interface within micronscale droplets. These interfaces provide an ideal platform for the formation of two-dimensional monolayers of nanoparticles, as they form spontaneously, cannot be broken, and are defect-correcting, acting as 2D 'nanoparticle traps'. Such two-dimensional self-assembled nanoparticle arrays have a vast range of potential applications in displays, catalysis, plasmonic rulers, optoelectronics, sensors and detectors. As an example, I will show that this system can be used for trace analyte detection using Surface enhanced Raman spectroscopy, high level purification, fine-tuning of plasmonic properties, and for the creation of ultrahigh density aqueous solutions.